JUN 19 1943

Gas Journal

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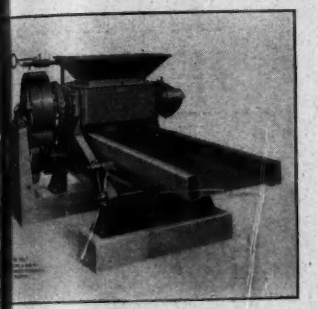
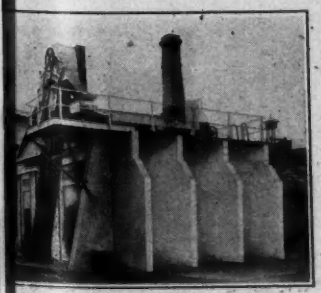
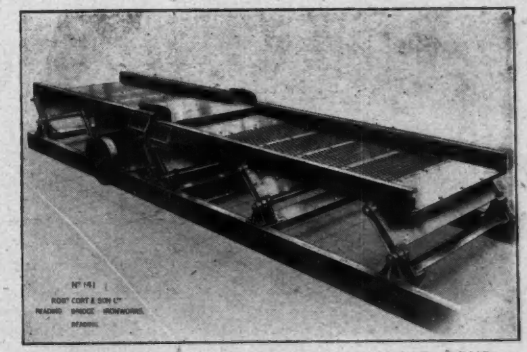


OKE CUTTING MACHINE WITH RECIPROCATING SCREEN

COKE CUTTING MACHINE CREENING AND BAGGING UNIT



SUDBURY, SUFFOLK, 5 TONS PER HOUR



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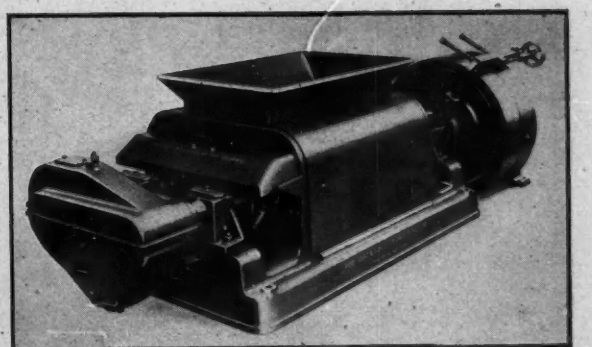

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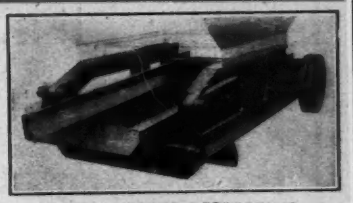

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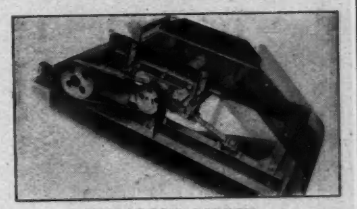

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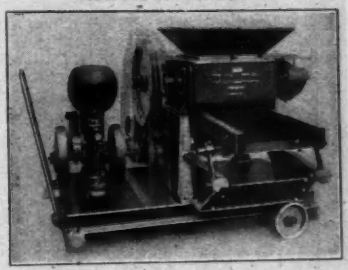

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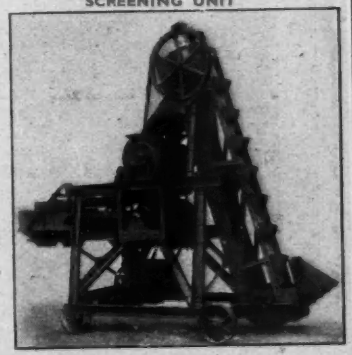

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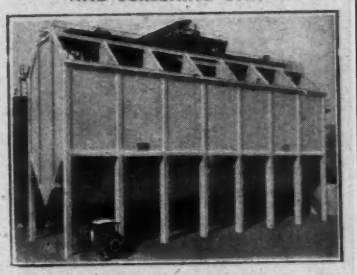

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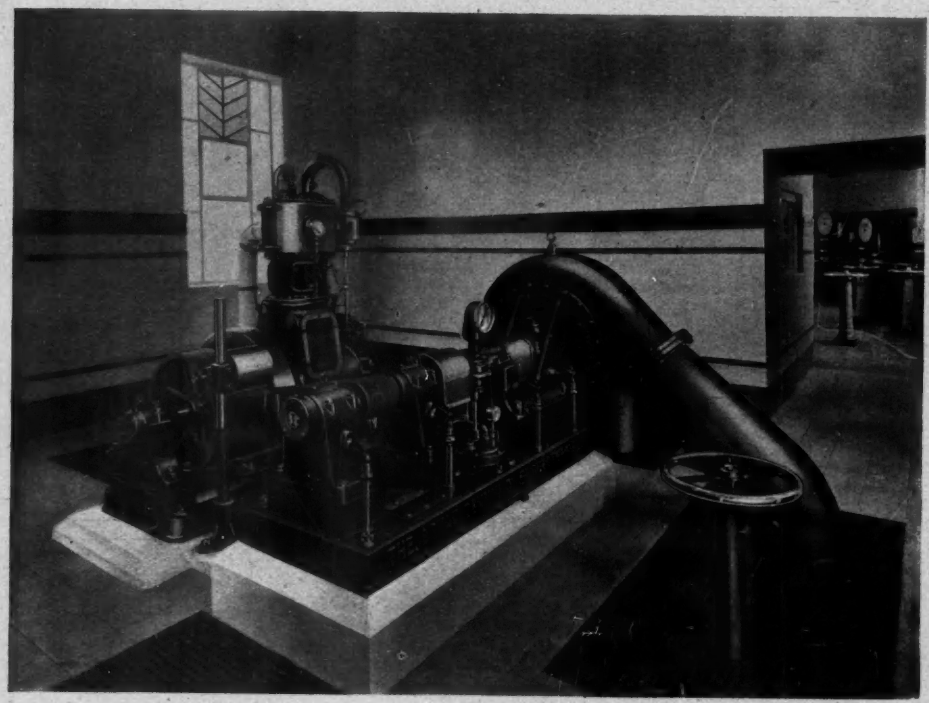

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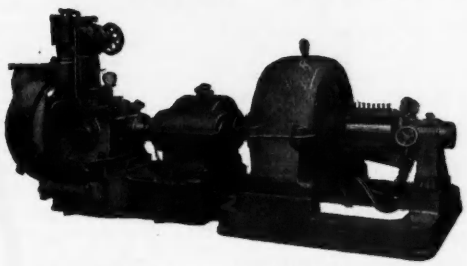

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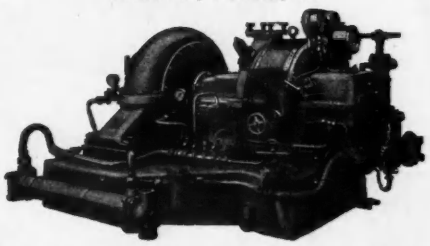

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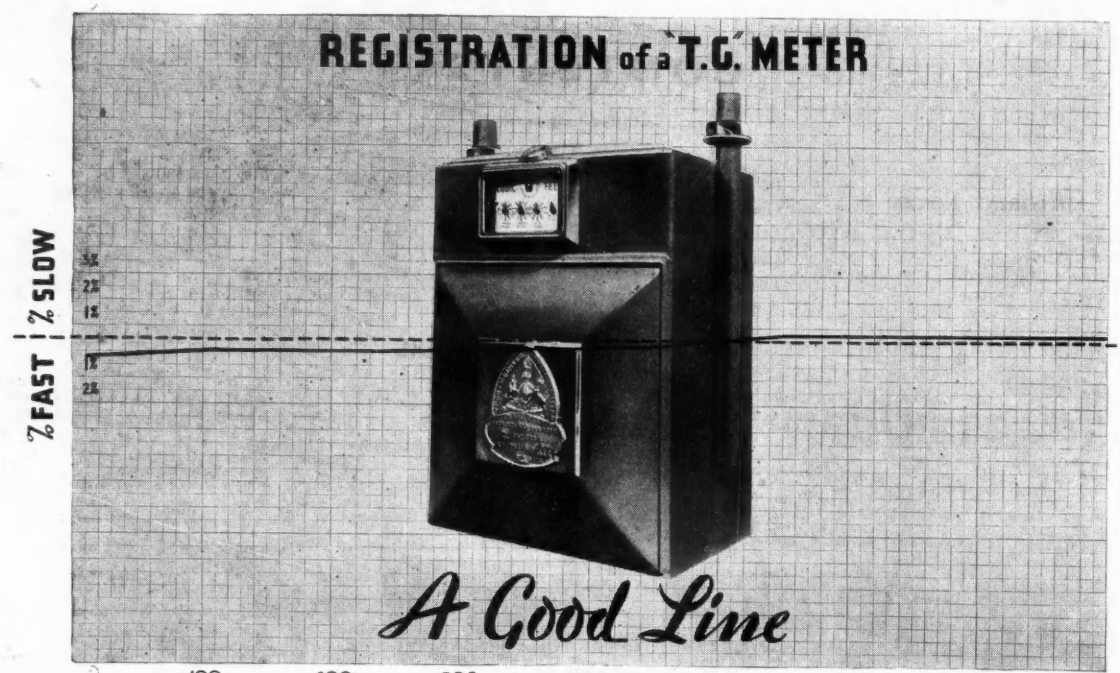

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p. 5

GAS JOURNAL, MAY 26, 1943

VOL. 241 95th YEAR No. 4175

EDITORIAL NOTES

FORECAST

OF unusual interest and, we hope, of considerable significance was the speech of the Minister of Fuel and Power at a recent gathering of the Fuel Luncheon Club, reported in our columns last week (p. 612). Major Lloyd George, addressing an audience composed of all the fuel interests, people accustomed to viewing fuel matters in their broader aspects, referred to some comments he had made shortly before when he spoke to the British Electrical Development Association. On that occasion he asked the electricians present to regard electricity supply not as a convenient medium for cut-throat competition, but in a spirit of co-operation with other fuel suppliers and on the basis that the interest of the consumer must have first place. His point was, we think, that expansion of electricity supply is in itself and unrelated to the supply of other forms of energy in the country, not a cause either for rejoicing or congratulation. His remarks, as can be imagined, did not go down very well, as he was quick to perceive. There was, he said, "silence still as death, and the boldest held his breath." That, of course, till he was out of earshot, when conversation hummed noisily if not merrily.

Major Lloyd George was, however, undismayed, undaunted, and unrepentant. He made this quite clear in his speech to the Fuel Luncheon Club. The electrical industry, he emphasized, must learn to co-operate—to co-operate for its own good and that of the nation and the consumer. One of the most important problems confronting this country is to make the best use of our fuel resources, and no industry can survive economically unless it realizes that its main duty is to its consumers. It is, or should be, accepted that gas and electricity are vital to the country's prosperity. We could not contemplate losing the by-products of the Gas Industry any more than we could contemplate losing the services in particular fields of electricity. Now there lies a field where there is no sharp definition between the services of the two industries—at any rate, on the face of it. There is a sort of intermediate zone, an area of contention. We ought to be capable of giving clearer definition to the relative merits, from the national point of view and that of the consumer, of gas and electricity in this intermediate zone. The benefits which gas and electricity are able to confer in this intermediate zone ought not to be prejudiced in cost or in extent by a struggle for mastery in this zone. The problem goes deeper than the mere gaining of business; it is essentially a national issue. It should not be a field for internecine warfare with extravagant propaganda pulling the community this way and that. Educational publicity—and all publicity is ultimately paid for by the consumer—comes into a different category.

The electrical industry looks to expansion after the war. It will have a high potential, and we are sure that expansion is right and, indeed, inevitable. But there ought to be channelling of this expansion in those directions calculated to benefit the community and the nation. And it must be realized that, with its carbonization processes, the Gas Industry is essential to the nation, and can in certain spheres supply energy in the form of gas and coke—both smokeless fuels—more economically than is otherwise possible, the while making available raw materials for a host of established and new chemical industries. Surely the primary task of the Minister of Fuel is to arrive at a composite fuel problem which, if not 100% perfect, will to a large extent at any rate eliminate gross abuse of our coal resources. The problem is many-sided, and we shall probably have to unlearn much which we have been led to believe is proper and even laudable. It is a problem the seriousness of which, as we have said before, calls for a new and broad conception of unity and co-ordination and warrants an impartial enquiry. We hope that the comments of the Minster of Fuel and Power to which we have referred can be regarded as in the nature of a forecast of a broader and more balanced conception of the fuel situation as a whole.

REVELATION

IT is, as we have said, good to have the necessity of recovering by-products from coal in the forefront of Ministerial thought; and it is to be hoped that the general community will eventually come to the conclusion that to throw away these products, by pushing them up a chimney flue connected with a raw coal burning grate, simply "is not done." So, to an extent, we were pleased to see the national Sunday Press, accustomed to providing a variety of light, entertaining, and informative thought for its millions of readers, tackling the subject a Sunday or so ago. Example, the *Sunday Dispatch*, May 16, where under the one-star feature "finance news" Edward C. Gayler had his bright and chatty technological say. His theme was to link up the purse of the investor with the potential value of the treated black diamond. Exploring the by-ways of the squander bug, he has discovered that at long last "we have reached a stage where we can find more to do with coal than just burn it away in our grates and in factories." And he follows up by remarking that the importance to Great Britain of our coal deposits is going vitally to influence our future prosperity. Which, we think, is true enough. And on this line of reasoning his Sunday financial tip was, so to speak, to put our shirts on coal. But we must be wary; we must not sink our money in mines where there is no provision for coal treatment, where the black diamonds delved therefrom are thrown into the domestic grate or the industrial furnace without being treated to recover fats and rubber and smelling salts, plastics, and dyes. No; as he sets out, some collieries just produce coal. Others own coke ovens and sell the tar by-product to distillation companies. And some companies (this presumably from the Author's inside information) are "already treating the tar to produce various by-products." Which is news. And, while we were told that investors who do not already hold coal shares should certainly acquire an interest, we were left with the impression that our less antique shirts should be placed only on collieries possessed of coke ovens.

Dawn of a new era? Be quick, while the going is good. Brighten up coal shares. After all, according to Mr. Gayler, we have "enormous quantities" of coal (our estimate is that Great Britain has less than 3% of the world's coal resources), and we must not burn it raw. Which we certainly must not, now that at long last we can, with the "new" processes available, recover by-products from it. We must subject it to carbonization. Not a word in the article, by the way, about the Gas Industry, which for over a hundred years has been recovering by-products in the "new" and approved manner. Perhaps mention of this would have dulled the poignant persistency of the Sunday message. Or would it? Apart from the Sunday Press, there is in process of development a real call for treating coal rationally in this country. There is an awakening to the rather obvious fact that we cannot afford to waste coal, that we must treat it scientifically. At the same time there is a gulf of difference between popularizing science and making science look

musty—as example, the *Sunday Dispatch* article and a subsequent one on the same subject in the issue of May 23. Not that we have criticism to make of those who feel the urge to drop their shirts down the mine-shaft. We would just remark that for about 150 years the Gas Industry has known how to recover the various by-products from coal, during the last war recovered by-products which were acknowledged to be essential to its successful prosecution, and during the present struggle, thanks to accumulated experience, is abundantly amplifying its services to the nation in this respect. The known scientific facts of the case would, at the present juncture, make quite a good story, and the carbonizing process ought in the future to earn both a safe and an adequate dividend.

PROGRESS AND EFFICIENCY

IN 1936 the British Gas Light Company purchased the Thetford Gas Undertaking; immediately the greater portion of the district mains was enlarged and relaid—a proposition which would have been a financial commitment beyond the resources of the Thetford Company. Subsequently storage capacity was increased and showrooms were opened. In the same year the Mildenhall Undertaking was acquired. A dilapidated carbonizing plant (the station meter, by the way, had not been working for a long time) was replaced; mains were extended; storage capacity was made adequate. The previous year the Brandon Undertaking was purchased. Here, also, storage capacity had to be provided. In 1937 came the acquisition of the Chatteris Undertaking. In this case, too, there had to be enlargement of mains and the erection of a holder. These bare facts are taken from the Presidential Address of Mr. L. C. B. Williams to the Eastern Counties Association last Thursday (see p. 640). It is the reverse of pleasant or encouraging to contemplate the condition of these undertakings only a year or two prior to the outbreak of the present war. They were obviously decrepit and incapable of fulfilling their proper functions.

Standing alone, not one of these little concerns could have called on the financial resources and skilled technical assistance required to carry out the schemes of reconstruction and extensions on the works and district which were essential to efficient working. One shrinks from thinking of the thermal efficiency of gasmaking at those works, one of which in effect did not possess a station meter, and at another of which extension of the retort-house meant encroaching into the sitting-room of the manager's house. And all this *circa* 1936. Not a good advertisement for the Gas Industry; hardly likely to add to its prestige or inspire confidence in the Industry's strength and its capabilities of service *vis-à-vis* electricity in a modern age. The position in regard to these undertakings has been remedied by speedy action backed by adequate financial and technical organization. While this situation has fortunately been retrieved, we have seen in the area covered by the Eastern Counties Association—reference was made to this at the meeeting—the demise of two small undertakings; death, through neglect, again hardly calculated to inspire confidence in gas, although, fundamentally, there is every ground for confidence. The trouble with the Gas Industry—and we are thinking of some, *not all*, of the smaller units, small but large in number—is perhaps over-confidence in the soundness of its case, which appears to have bred apathy which is alarming. Quite an appreciable section of the Industry wholly lacks any sense of urgency, and in this regard is lazy. No wonder the Ministry has issued an ultimatum that the Industry should formulate its plans and suggestions, not this year, next year, or never, but by August next. This lack of any sense of urgency on the part of many undertakings constituting the Gas Industry is, to say the least, pitiful. Also, it is quite inexcusable.

The Eastern Counties Association were lucky in having with them Mr. E. V. Evans, President of The Institution of Gas Engineers, who gave an immaculate Address on efficiency. The Gas Industry has, as we have said, a cast-iron case. It has a process, if properly operated, which is highly efficient thermally. But have we become rather complacent because of this possession? We talk about our 75% or 80% or 85% conversion efficiency. This, however, is a process figure, as we have been at pains to emphasize on several occasions this year. Six months ago we put the matter thus: A ton of coal contains 300 potential therms. If we take a fuel usage index of 26, which has been assumed to be a national figure, a weighted average, we have a thermal efficiency of gas production of approximately 53%. If we use this gas at 50% efficiency, the overall thermal conversion of coal to useful heat via gas is about 27%. This, by the way, is not a bad figure. It could be better; in many individual cases it is better; in some cases it is worse. Apart from thermal efficiency, we must always bear in mind that in the process we have recovered by-products the value of which cannot be accurately assessed on a thermal basis. Mr. Evans used rather different figures in arriving at an overall efficiency of 29.2% for the carbonization process (on the basis that 1 ton of coal yields 75 therms of gas (utilization efficiency 50%), 145 therms of coke (utilization efficiency, 25%), and 20 therms of tar (utilization efficiency, 70%). For best electricity practice he put forward a figure for overall thermal efficiency of 19% (this allowing for a generation efficiency of 29%).

Now this 29% overall efficiency of the Gas Industry can be improved. It can be improved in the first instance by reducing the fuel usage index; it can, concurrently, be improved by raising the standard of efficiency of gas appliances and coke appliances. The efficiencies quoted by Mr. Evans will be improved upon. For example, a sulphur-free gas burned fluelessly gives an efficiency of 90% when used for space heating, and we can anticipate much higher coke utilization efficiencies—for instance, 70 to 80% in slow combustion stoves. So that our figure of 27% or 29% can be raised, while there is not the same scope with electricity's 19%, and with electricity generation we derive no by-products. It is, so to speak, an "all-consuming" process.

What we would emphasize, however, is that our figure of, say, 28% for the overall efficiency of the Gas Industry is based on good works procedure. In the earlier part of this note we referred to certain small works which by no manner of means could have a fuel usage index of 26. Suppose they had a fuel usage index of 50. Translate this into thermal efficiency of gas production; translate this again into thermal efficiency in use, to give overall efficiency. Then we have something to think about. We shall arrive at the conclusion that we cannot afford to have inefficient units in the Gas Industry, that we cannot afford to be complacent, that a retort-house extension which involves encroachment into the sitting room of a manager's house is not in keeping with the times or in accord with national fuel economy and current ideas of gas service. That we ought to have station meters at our works, and that, in brief, we ought to wake up. And we ought to remember that the alarm has been set by the Ministry of Fuel and Power.

Diary

June 8.—National Federation of Gas Coke Associations, General Committee, Gas Industry House, 9.30 a.m.

June 9.—Institution of Gas Engineers, Annual General Meeting, London.

June 9.—National Benzole Association—Annual General Meeting, Wellington House, Buckingham Gate, S.W. 1, 3 p.m.

June 21.—London and Counties Coke Association, Gas Industry House.—Finance Committee, 11 a.m.; Executive Committee, 11.30 a.m.; Central Committee, 1.30 p.m.

The fact that goods made of raw materials in short supply owing to war conditions are advertised in the "Journal" should not be taken as an indication that they are necessarily available for export.

Personal

At the request of the Ministry of Fuel and Power, Dunfermline Town Council has agreed to release Mr. JAMES CAMPBELL, the Corporation's Gas Engineer and Manager, to take over the post of Regional Gas Officer for Scotland. Mr. Campbell has been Manager at Dunfermline for 25 years and before that held similar posts at Polmont and Bo'ness. In 1926 he was President of the North British Association of Gas Managers.

* * *

Mr. A. F. OATLEY has been appointed an additional Director of Cannon Iron Foundries, Ltd. Prior to joining the firm, Mr. Oatley held the position of Sales Superintendent to the United Kingdom Gas Corporation.

* * *

Mr. F. J. SMITH, Works Superintendent of the Kidderminster Gas Company, has been appointed Engineer and Manager of the Burgess Hill Gas Company.

Obituary

Mr. JOSEPH HARGER PYE, F.C.S., M.I.Mech.E., died on May 23 at Clevedon. He retired from the position of Engineer and Managing Director of the Clevedon and Yatton Gas Company last year after 43 years' service.

* * *

Mr. JOHN GIBB, who was formerly Manager of Newton-on-Ayr Gas Company, Ltd., died on May 15.

* * *

The death occurred recently of Mr. FRED OLDHAM, Secretary of the old Hyde Gas Company. On the formation of the North Cheshire and District Gas Company in 1936, which amalgamated the areas supplied by Hyde Gas Company and Denton and Dukinfield Corporations, he retired, after over 40 years' service with the Company.

Letter to the Editor

Co-Partnership

DEAR SIR,—The subject of co-partnership taken up by Mr. Wm. Cash ("JOURNAL" of May 12, p. 579) was not one of the main points I wished to make in my recent article, and my comments were thus kept as concise as possible. Perhaps you will allow me to reply briefly to Mr. Cash.

It cannot be denied that the extension of piece-rate systems ousted co-partnership in many industries because of the greater incentive possessed by piece-rate methods—due primarily to the tangible reward for hard work contained in the pay envelope each week. Of course, piece-rate methods are not generally applicable to the Gas Industry, although they are used by many undertakings as widely as possible *in addition to co-partnership*, presumably to make up for the lack of incentive of the latter. The quotation which Mr. Cash takes from my article may perhaps be preferably italicized thus: "The value of co-partnership *as an incentive is nil*." That the scheme has to be "explained to the workpeople"—I think a more correct term would be "preached"—is sufficient evidence that its rewards are not immediately evident. The incentive therefore cannot be obvious. I reassert that it is worth while attempting to find a bonus incentive system which reflects the efforts of the Industry's personnel both individually and collectively more closely than does co-partnership. Admittedly this would be a difficult problem.

My main contention must be, however, that my experience of co-partnership in action in both large and small undertakings does not coincide with that of Mr. Cash. I have been a "questioner," and, perhaps what is more important, a "listener" in close personal contact with men, mainly on the works. The Industry employs a large percentage of unskilled labour and these men cannot afford to be very interested in saving. They live too near what is commonly called the "bread line" even in peacetime. To them the retention by the company of bonus payments which they consider to be part of their earnings is unjustified, particularly when they are faced with unexpected expense. Hence the demand frequently made for permission to sell shares—a practice which, if allowed by the management, would destroy the co-partnership scheme. These workers need money more when they are bringing up a family than when they retire.

The provision of facilities and the encouragement to save by investment in the worker's own company is, of course, highly desirable, but it is doubtful if the compulsory method of co-partnership is the best. Moreover, the establishment of a pension scheme does not necessitate a co-existent co-partnership scheme.

Mr. Cash says that "the opportunity to invest is regarded with pleasure, as is evidenced by the substantial holdings . . ." Surely the amount of the holdings is fixed by the undertaking and does not represent voluntary purchase of shares. It would be interesting to know what proportion of the "withdrawable" bonus is applied to the purchase of further shares by the average co-partner.

Co-partnership in its literal sense involves a share in the management of an undertaking in proportion to the workers' shareholding. So far as I am aware this is always withheld by managements. Were it not so, the "pride in the company" might be a little more in evidence.

It is true that in many cases there does exist an *esprit de corps*, a "genuine enthusiasm" and a "pride in the company"—terms beloved of co-partnership committees—but I suggest that these are produced more by good management and welfare organizations than by co-partnership. They would not be found in an undertaking with a co-partnership scheme and a bad management.

The security of employment which co-partnership tends to create is a mixed blessing. Insecurity is often a greater incentive to better work. The casual labourer sees his securely employed co-partner mate frequently slacking, and he naturally feels somewhat sore at "dividend time." Managements would do well to use their power of suspension of co-partnership agreements more rigorously to stop these abuses, and to find a means of recompensing the good worker not admitted to co-partnership because he is too old.

Finally, if the proposals in the Beveridge report are implemented to provide increased financial assistance in old age the main pillar of the co-partnership system will be undermined.

Yours faithfully,

May 18, 1943. "FUTURIST."

Calculation by Nomogram

A useful service has been rendered to the Gas Industry by the Parkinson Stove Company, Ltd., in the distribution to undertakings throughout the country of a wallet containing the six nomograms which were recently featured in their technical advertising. Problems requiring calculations based on standard formulae, such as the flow of gas or water in pipes, frequently confront the busy engineer, and these nomograms have been designed with a view to the easy solution of such formulae without recourse to the slide rule or mathematical tables. The nomograms cover (1) flow of gas in service pipes, (2) gas in low-pressure mains, (3) gas through orifices, (4) gas in high-pressure mains, (5) water in pipes, and (6) steam in pipes, and all that is necessary is the insertion of a series of straight lines, the required solution being indicated at the point of interception of the appropriate scale by the last line drawn. The ready use of the nomograms is further facilitated by the fitting of the wallet with a Kodatrace panel on which the lines may be drawn to complete any calculation; when the solution is no longer required it can be erased with a soft rubber, and the panel is then ready for further use.

An Attractive Fuel Economy Exhibition was staged in the Greenock Gas Showrooms in conjunction with the "Wings for Victory" Week.

The Annual Meeting of the Wales and Monmouthshire Association of Gas Engineers and Managers will be held in Cardiff on May 27, when Mr. A. E. Pask will deliver his Presidential Address and Mr. E. V. Evans, President of The Institution of Gas Engineers, will also address the members.

Falk, Stadelmann & Co., Ltd., have recently added to their Board Mr. C. J. B. Gregg and Mr. B. G. W. Cole, who for the past fifteen years have held the position of Local Director at Glasgow and Manchester respectively.

Thousands of Visitors thronged the Showrooms of the Cambridge University and Town Gas Light Company, where a most ambitious Exhibition was open from May 8 to 15 in support of the local "Wings for Victory" campaign. Official recognition of the public-spirited and practical manner in which the Gas Company had co-operated was given towards the end of the week, when the Mayor and Mayoress (Sir Montague and Lady Butler) paid a visit to the Exhibition, accompanied by Air Vice-Marshal M. D. K. MacEwen. The party was welcomed by the Chairman of the Gas Company (Mr. J. F. Cameron), the Vice-Chairman (Mr. F. J. Dykes), and Mr. J. Hunter Rioch (General Manager and Secretary), who was congratulated on the excellence of the whole arrangements.

Dividends

Parkinson & Cowan, Ltd., recommend a first and final dividend on the ordinary shares of 5% actual, less tax, for the year ended Dec. 31, 1942 (same). Profit for the year is £48,423, against £45,395 for the previous year.

Dougall's Gas Meters, Ltd., of Chiswick, are paying a dividend of 7% on their preference capital in respect of the year ended Dec. 31, 1942, and 7% on their ordinary capital for the three years ended Dec. 31, 1928.

The Directors of the Imperial Continental Gas Association announce that they are unable to recommend the payment of a dividend for the year ended March 31, 1943, on the £5,600,000 Capital Stock of the Association. It is hoped that the report and accounts for that period will be available by June 2. The general meeting is to be held at 2, Devonshire Square, Bishopsgate, E.C. 2, at 12.30 p.m. on June 11.

EASTERN COUNTIES ASSOCIATION

A HALF-YEARLY (the 102nd) Meeting of the Eastern Counties Gas Engineers' and Managers' Association was held on May 20 at Gas Industry House under the Presidency of Mr. L. C. B. Williams (Thetford). Welcoming those present—and there was a good attendance of members—Mr. Williams said how pleased they all were to have with them the President of The Institution of Gas Engineers, Mr. E. V. Evans, who had accepted the Association's invitation to address them.

Following the formal opening of the business, Mr. Williams asked Mr. F. H. Robinson (Bishops Stortford), the retiring President, to accept a silver salver, appropriately inscribed, as a token of the Association's appreciation of his services as President, an office he had filled with efficiency and dignity, and to the great satisfaction of all. Mr. Robinson, returning thanks, said that, while he hoped his year of office had been successful from the point of view of the Association, he personally had thoroughly enjoyed it and had found it full of interest.

At this stage Mr. Williams announced with regret the death of Mr. A. Gregory (Harwich), a Past-President of the Association and a member for 23 years.

After unanimous agreement regarding election of new members, and similar approval of the Committee's annual report and statement of accounts, Colonel J. Kennington (Grimsby) proposed that the sum of £30 should again be donated to the Benevolent Fund of the Institution. In doing so Colonel Kennington stressed the desirability of making individual contributions to the Fund in the form of deed of covenant. The proposition was seconded by Mr. J. H. Troughton (Newmarket) and carried.

Then came Mr. Williams's Presidential Address, in which the President outlined the type of work involved in raising the standard of efficiency of small works—a subject of obvious importance and topical interest. A substantial abstract of the Address follows. Proposing a vote of thanks, Mr. R. A. Weston (Norwich) remarked that the Address covered a subject bound to loom large in the Industry's organization for future service on a co-ordinated basis. Recently, in the area covered by the Association, two small undertakings had been allowed to go out of existence. He thought it almost unnecessary to emphasize the adverse effect on the Gas Industry as a whole of the cessation of gas facilities in particular districts, however small, rural, or remote. Which led him to comment on the proved value of grouping, for there could be no gainsaying the benefit which arose from the taking over of small companies by a parent holding company.

Seconding the vote of thanks, Mr. T. C. Battersby (Watford) suggested that the Address was a record of achievement in the controlled development of the smaller undertaking.

And this brought us to the Address of Mr. Evans (see abstract on page 643), delivered immaculately to a keen audience. Thanks for the Address were proposed by Mr. J. Hunter Rioch (Cambridge), who remarked there was no doubt that in the future there would have to be more reliance on the chemist than there had been in the past, and all present must have been inspired by what Mr. Evans had said—inspired by his enthusiasm and his confidence, a confidence based on a reorganized Industry prepared for changes, an Industry in which purely personal interests would be subordinated to the common good. Higher standards of gas supply must be achieved and maintained; every undertaking must be prepared to guarantee the quality of the gas it supplied. Implementation of this was in the domain of the chemist.

The vote of thanks to Mr. Evans was seconded by Mr. F. Prentice (Ipswich).

The remaining item on the agenda was a report by the Chairman (Mr. T. C. Battersby) of the activities of the Eastern Region Advisory Board. His comments were for the most part concerned with the returns asked for by the now disbanded Directorate of Gas Supply.

The meeting was preceded by a luncheon at the Connaught Rooms, Great Queen Street, on the invitation of the Chairman and Directors of the British Gas Light Company, Ltd.

Presidential Address

of LEONARD C. B. WILLIAMS

(British Gas Light Company, Ltd., Thetford)

The records of the developments which have taken place in the five works of which I am Engineer and Manager may present some unusual and interesting features.

Thetford

Having recorded the early history of the undertaking, Mr. Williams went on to say: From 1901 to 1926 a steady increase in output is recorded, the make of gas in 1926 being 16 million cu.ft. In that year I was appointed Manager to the Company, taking over during the national railway stoppage with the accompanying difficulties of indifferent grades of coal. A set of purifiers were put into operation in that year replacing a small set of water-lute boxes. Reduction in purifying costs resulted. A tar dehydration plant was installed, designed for gas firing in order to economize labour. This has since been converted to coke breeze firing and has proved very satisfactory. About this time a suggestion was put forward that the undertakings at Thetford, Fakenham, Watton, and Swaffham should amalgamate and function as a group. It was realized that many benefits would accrue, but difficulties were encountered and the proposal was dropped.

The output of gas in 1928 had increased to 18 million cu.ft. and additional storage capacity had to be provided. It was decided to build a three-lift spiral holder into an existing cast iron tank, thus increasing the storage of that particular holder from 10,000 to 40,000 cu.ft. During the following year the existing coal sheds were reconstructed by direct labour and a weighbridge was installed. A small showroom was opened in the town. An advertising campaign was conducted, and exhibitions were held in the local hall with cookery demonstrations. These exhibitions proved extremely popular. By 1931 the output had increased to more than 21 million cu.ft., and it was found necessary to extend the existing retort house, or purchase additional land and build a new house. The latter course was decided upon, and the horizontal system (stop end) was adopted. A Morris scoop charger was installed to save labour and eliminate the wastage of hand charging. A retort-house governor and Cort's anti-dips were included. A hand-operated method of hot coke quenching was adopted. We designed a coke spray by which the quantity of water was increased. The method more than doubles the life of hot coke barrows, and I believe it has been adopted at other works. The go-ahead policy of the Directors was amply justified. By 1935 the output had increased to more than 24 million cu.ft., and the leakage reduced to 7.96. A Cort's coke breaker was purchased to meet the demand for broken coke.

In 1936 the British Gas Light Company purchased the undertaking. Immediately the greater portion of the district mains were enlarged and relaid, which would have been a financial commitment beyond the resources of the old Company. Hire purchase facilities were extended which consumers were quick to appreciate. The need for adequate showroom accommodation was met by the purchase of a site in the main shopping centre. The existing building was demolished and a showroom and offices were erected. The office provides accommodation for the staff carrying out the work of the five undertakings. In 1938 the demand for further storage made it necessary to add a further lift to the single lift column guided holder. As the other holder only held 40,000 cu.ft. it was desirable that the column holder should be in commission while the additional lift was being added. In the first instance the guide framing was extended to accommodate the outer lift. A timber structure was then built on the crown, and the crown guide rollers transferred to this timber framing and fixed on specially constructed carriages. The top and bottom curbs were assembled on the timber superstructure and the side plates added which completed the outer lift. Eight suspension rods, with screw jacks, one from each special carriage, with a claw under the grip were made ready for lowering the lift. Temporary angle guides had been attached for stability. The guide rollers on the bottom curb of the inner lift were then removed (these had been packed with wood blocks) and transferred to the bottom curb of the outer lift in place of the temporary angle guides. The next stage was to lower the inner lift to within one sheet of the water line and take the weight of the outer lift on the screw jacks, afterwards cutting away the timber baulks which had carried it. The screw jacks were then extended one at a time. As the lift was lowered into the tank, one man was at each jack to ensure uniformity of lowering. The crown carriages from the timber framework were then refixed to the inner lift in their original position, the timber dismantled and the crown carriages and rollers fixed to the outer lift. During course of construction a heavy gale was experienced, and it speaks well for the work of the contractors that no serious mishap occurred. The holder was thus in constant use while the work was carried out, with the immediate advantage of an increased pressure of 2 in. due to the timber structure and the outer lift being carried on the inner one.

The works and district are now in first class condition and capable of carrying all normal loads with a considerable margin of reserve. The average gas consumption per consumer in 1939 was 21,500 cu.ft., which, for what might be described as a rural area, is well above the average.

Mildenhall

This undertaking was acquired by the British Gas Light Company in 1936. The initial survey of the works disclosed that extensive repairs were necessary. Holder accommodation was very limited with low pressures. The retort bench consisted of one generator setting in an advanced stage of dilapidation, and one direct-fired setting. The station meter had not been working for a considerable period; the works generally were in need of reconstruction.

Perhaps the most unusual feature of our extensions at Mildenhall is that, since the works is on what is virtually an island, space is limited, and the retort bench had to be extended into the manager's house; a new residence was provided.

The inside of the old house was completely gutted, and one of the

outside walls carried on a girder and stanchions in order to allow the width of the house to be increased by building an extension to it almost to the river edge. The cellar is situated below river level, and although several exceptionally heavy floods have been experienced it has remained free from water. In the new house a bench of retorts was installed with one setting of six 21 in. by 15 in. and one of four in an arch capable of taking six, and the old retort house is now being used for coal storage.

A piece of land adjoining the works was purchased and a spiral-guided holder of 30,000 cu.ft. capacity was built, designed for an additional lift. Before the holder could be brought into operation the water lute purifiers had to be converted to dry lutes, because of the higher pressures. The smaller of the two original holders was scrapped, the tank being used for tar and liquor. No proper stores existed, so we adopted a course taken at other of my works and purchased an excellent sectional Boulton & Paul wooden building and have found it entirely satisfactory. I would recommend this course to any manager without stores as an inexpensive and easy solution of the problem—in times of peace, of course, when timber controls no longer function.

Brandon

Brandon works was purchased by the British Gas Light Company in 1935 and was thus the first in the Thetford area. Thus when Thetford was acquired in 1936, it was logical to place Brandon under Thetford aegis. Already a supply of gas had been taken to an outlying district and a large number of consumers added. A showroom was opened in the main shopping street of the town; the sales of appliances showed a heavy increase. Recordings were taken of pressures at the furthermost points on the district, and these indicated that at peak loads pressures were inadequate. Tenders were therefore invited for the supply and erection of a spiral-guided holder of 30,000 cu.ft. capacity to the same specification as that erected at Mildenhall. When this was brought into commission conditions were brought up to our normal standard on the district and fluctuations of calorific value were practically eliminated. This was undoubtedly due to the fact that the inlet and outlet pipes of the new spiral holder were diametrically opposed, whereas those of the original holder were placed side by side, allowing the gas from the inlet to pass straight to the outlet without mixing.

Littleport

Taken over in July, 1936, this undertaking was generally in sound condition. A new holder of 30,000 cu.ft. capacity had been completed; purifiers and other plant were of adequate capacity. It was decided, therefore, to concentrate on the district and, as in other towns, the consumers were quick to appreciate the extended facilities offered them in the purchase of appliances. A lock-up showroom was already in existence but space was cramped. Arrangements were therefore made for the showroom to be extended to afford room for an office. At the same time the showroom was redesigned to modern requirements.

Chatteris

Purchased by the Company in 1937 it was evident that an extensive scheme of relaying the district mains must be carried out immediately. A belt-driven fan booster was used for increasing pressures and a drop of 90/10ths was experienced between the works and the outlying district. Several miles of main were enlarged using spun pipes with Staveley flexible joints, and it was then found possible to reduce pressures by 50% at the outlet of the booster. The pressure drop between works and the furthest point of supply is now negligible. A survey of the district was completed and several hundred new consumers were coupled to the mains.

The storage question again arose here. It was a common occurrence on Sundays after the cooking load to have only 2,000 cu.ft. in stock. As is frequently the case, no space was available, so a plot of land adjoining the works was purchased and a two-lift spiral-guided holder of 60,000 cu.ft. capacity was erected. This was situated on the other side of a railway line and the connexions had to pass under the tracks. With the co-operation of the Railway Company's district engineer a tunnel was made and we inserted two 12-in. steel tubes encased in concrete into which we placed our 10-in. connexions, thus allowing for their withdrawal, if necessary, without any further disturbance of the Railway Company's property.

At first it was only possible to use the top lift of the new holder, as the water-lute purifiers were not capable of withstanding the added pressures. As they were in very bad condition and of insufficient capacity it was decided to transfer from another of the Company's undertakings, now interconnected for a bulk supply, a set of four boxes which were capable of dealing with the increased load. These were erected on a new site and the old boxes scrapped; the purifier shed is now used as a revivifying house for the oxide.

A station governor was put in as the holder pressures were in excess of the maximum required on the district.

General

I should like to give generally my personal experience with regard to the management of a group of small undertakings. First I must emphasize how fortunate I am in having at all my undertakings reliable and competent local managers who give me the utmost loyalty—a prime necessity at all times but more especially in these difficult days. In peacetime I visit each undertaking at least once a week, and more frequently when circumstances call for it. Even in wartime the average remains much the same.

In normal times we are able to form a pool of skilled labour, both for works and for districts, which is at the service of any undertaking in the group. We have concentrated bookkeeping, records, and office work at Thetford, and as Manager I have all the information and detail there to enable me to deal expeditiously with the day-to-day correspondence and returns of each undertaking. When it is realized that individually few of such works could afford the services of a clerk, let alone a shorthand typist, the saving and efficiency resulting will be appreciated.

Standing alone, not one of these little concerns could have called on the financial resources and skilled technical assistance required to carry out the schemes of reconstruction and extensions on the works and district which were essential to really efficient working. Doubt has been expressed in some quarters as to the ability of the small undertaking to function efficiently and provide adequate service or to hold its own at all in the stress of post-war competition. This view may be in some measure justified in the case of the isolated small works playing a lone hand; for without the assistance of fully qualified officers and the means for carrying out improvements and extensions, such an undertaking may well be hard put to it to maintain that high standard of efficiency which competition and the times demand.

Physical linking up in East Anglia is in many cases not an economic proposition, and the country after the war will be in no position to indulge in the luxury of expenditure which does not yield a return of at least improved efficiency and service at no greater cost. But in grouping and co-ordination there is a very effective alternative which in the light of my own experience I consider is the answer to the critic, and should form the basis of any regional planning.

Interpretation of Efficiency

by E. V. EVANS, O.B.E.,

President of The Institution of Gas Engineers

Recently the Parliamentary and Scientific Committee has issued a report on Fuel and the need for further research. In this report it is stated that from all the coal consumed in the country only some 30% of the energy is usefully employed, the remaining 70% being wasted. I know how proud we are that our carbonizing process operates with a thermal efficiency approaching 80%. That is to say, it results in the recovery of 240 of the 300 therms originally present in the coal. But that is only the thermal efficiency of the process. When we come to use the products—gas, coke, and tar—their efficiency in use must be taken; and the overall efficiency in use, starting from the original coal, is much lower. I am therefore using three terms:

(1) Thermal efficiency of production.
(2) Efficiency in use.
(3) Overall efficiency.

Now this question of computing efficiency in use is a matter upon which gas chemists seem to delight to argue, and there are indeed many ways of approaching the problem. In order to develop a point that I wish to make later I am proposing to use recognized figures for the percentage efficiency in use.

Generally speaking, a ton of coal yields:

75 therms of gas,
145 therms of coke, and
20 therms of tar.

In the home it is generally accepted that gas can be used with an efficiency of 50%; in the domestic grate coke is used with an efficiency of 25%. As regards tar, I must assume that it is used industrially as fuel with an efficiency of 70%. From these figures it can be shown that the weighted average efficiency of gas, coke, and tar is 36.5%, and as the efficiency of the gasmaking process is 80%, the overall efficiency is therefore 29.2%, which you will see is not at all far removed from the 30% stated in the Parliamentary Report.

Here, for our peace of mind, and before proceeding with my argument, it would be well to see how our competitors, raw coal and electricity, in their service to the fuel supply of the home compare with us when considered in the same manner.

Raw coal brought into the home is, except for spillage, a process of 100% efficiency. Coal therefore starts at an advantage compared with the gasmaking process, but in use in the open fire its efficiency is of the order of 20% and this, then, is its overall efficiency in use. May I add that when used in the kitchener its efficiency is lower, perhaps as low as 12%.

In the case of electricity let us accept their highest generating efficiency of 29%, and assume a transmission loss of 14% which will bring the efficiency as delivered to the home to 25%. It may be assumed that the average efficiency of electrical appliances in the home is 75% and thus the overall efficiency is reduced to 18.75%. So that at least we have the satisfaction of knowing that we operate as a public utility service the best coal-conserving process known.

Now to return to the original argument. A survey of these effi-

ciencies in use shows that if the gasmaking process were operated to yield only gas and liquid fuel, a further great contribution would be made to the solving of the problem of the conservation of coal.

If, for instance, it were possible to evolve a complete gasification process operated with 80% thermal efficiency and producing gas whose calorific value was sufficiently high to permit of its cheap distribution, it would follow that that gas when used with an efficiency of 50% would give an overall efficiency of 40%—already an appreciable improvement. Physicists are hopeful of designing appliances which will operate at efficiencies higher than 50%. Already water heating in the home can be carried out at a working efficiency approaching 70%. Gas fires of the future—when sulphur is removed from the gas—will incorporate background heating by flueless heaters supplemented by radiant heat, and will operate at an efficiency of the order of 60%.

So you will see that in the future we may be able to use gas in the home with at least 60% efficiency, and this would raise the overall efficiency of a complete gasification process to approximately 50%, an advance which would be of the greatest importance not only to the nation, but also to our Industry.

Of course, the chemist is still a long way from having evolved a complete gasification process which will operate at 80% efficiency and yield gas of reasonably high calorific value. But I think you will be interested to know how he approaches the problem.

It may be said generally that to make gaseous and liquid fuel requires a greater proportion of hydrogen to carbon than is present in coal. (I think producer gas is an exception to this generalization, but this need not worry us.) Coal contains too little hydrogen to give us the best and most efficient fuels—gas and fuel oil. In our ordinary carbonization process practically the whole of the hydrogen of the coal appears in the gas and tar, and the residue left in the retorts is, to all intents and purposes, pure carbon.

It is not surprising, therefore, that the chemist should seek a means of adding hydrogen during the carbonizing process, and adding it in such a manner that it enters into chemical combination with the products as they are evolved. If he can achieve this and obtain a rich gas and a rich fuel oil by a process as efficient as the present carbonizing process, he knows he can rely upon improved efficiency in use and its consequent improvement in overall efficiency.

If we could achieve a 50% overall efficiency in domestic heating as compared with our present achievement, which we have stated to be of the order of 30%, I do not think there would be a truly competitive fuel.

All this is indeed work upon which the Gas Research Board is engaged. Hydrogen under pressure does combine readily with the coal substance during carbonization and, as you know, the laboratory results are so encouraging that an exploratory plant is being erected at a gas-works "somewhere in England."

In the laboratory complete gasification is achieved, and a gas of 450/500 B.Th.U. per cu.ft. is obtained to the extent of 200 therms per ton, with a fair quantity of light tar which should be readily converted to light and heavy fuel oil. The Gas Research Board is, however, a long way from making this process a successful and economic one to be used by the Industry day in and day out, and my reason for making reference to it is to give an example of the trend of thought of the chemist.

SOCIETY OF BRITISH GAS INDUSTRIES

Report of the Council for 1942–1943

IT is with the greatest pleasure that the Council is able to announce that Sir Francis Joseph has very kindly consented to serve as President of the Society for a further year.

Council

The "standstill" arrangement has now been in operation for three years with the full concurrence of the Society's members. The Council during this period has largely deputed its functions to an Emergency Committee which has met at regular intervals, and the Council has been kept fully informed of the Committee's work and decisions by the receipt of the minutes of meetings, and by consultations from time to time on specific points. The arrangement has worked both advantageously and efficiently and has served its purpose well. In the view of the Council, however, the time is now opportune to revert to more normal procedure and to hold elections. Already in many aspects of the life of the nation there is a notable tendency to face the implications of the return of peace, and in these circumstances it is thought desirable that the full Council should again hold regular meetings, and that it should have the benefit of the constant flow of new personnel which annual elections will provide. A step such as this appears to be in harmony with the general trend to-day, and in consequence the Council is confident in recommending it that it will be interpreting the wishes of the Society's members in general.

The Gas Industry

It would seem appropriate in taking stock of the position to-day to survey very briefly in this report the part the Society has played since the outbreak of war, as the services which the Society's members render to the Industry are so vital to its welfare as to be, in certain aspects at least, a measure of it. The transition from a peacetime to a wartime basis proved no less complex for the Gas Industry than for the other great industries, and in particular the public utilities of the country, and the Society, in common with the other national organizations in the Gas Industry, was brought face to face with a large number of new problems which had to be dealt with, with the least possible delay. The machinery, flexible and adaptable as it proved to be, which had been created in peacetime to deal with problems of common concern to all branches of the Industry, stood it in good stead, however, and the Society was able and ready at once to play its part where the interests of its members were affected. Immediately on the outbreak of war effect was given to a resolution of the Council offering the Society's services to assist the Government in any and every way possible, and this offer resulted, as events showed, in the Society being called upon to meet a demand on its services to an extent which had no parallel in the years 1914–18. Leaving aside the numerous matters of detail which have been dealt with on a day-to-day basis, the Society had first to establish with The Institution of Gas Engineers, representing its members' customers, the basis on which contracts would be executed during the war period, and this was achieved before the end of 1939 by the introduction of an approved Clause in Standard Conditions of Contract to cover responsibility for damage and an agreed rise and fall clause. The availability of labour and materials quickly emerged all too obviously as the key to the capacity of the Society's members to meet the requirements of gas undertakings, and in the latter part of 1939 the Society, with the assistance of its members, prepared an estimate of their requirements of ferrous metals at the request of the Board of Trade. This estimate formed the basis on which ferrous metals and subsequently other materials in relation to it have been allocated throughout the war period. It also not only established that the Society's members were users of raw materials for production to an extent which it would be an obvious understatement to say evoked marked comment at the time, but it also emphasized in consequence the lack of appreciation which appeared to exist in many responsible quarters of the magnitude and importance of the Gas Industry. This situation was carefully analysed by the Emergency Committee, and steps which were taken and consultations which were initiated with the representatives of gas undertakings and others have borne fruit to an extent which is now so well known as to draw attention in retrospect to the very notable progress which has been achieved.

Throughout this period, therefore, constant attention was paid not only to the needs of the Society's members in raw materials, but also to the methods of their allocation, with important and satisfactory results. When, as in the case of gas water heaters, for instance, it was necessary for the Industry itself to administer a quota, the Society assumed the responsibility. When, as in the case of domestic lighting burners, the only prospect of securing the necessary output was for a scheme of concentration to be arranged, the Society acted on behalf of the Board of Trade and the Ministry of Fuel and Power, and a successful scheme was planned and initiated. Concurrently, close attention was consistently paid to the labour requirements of the Society's members. When the Essential Work Order was announced, an application which the Society immediately made that the claims of its members to be scheduled under the Order should be considered was understood to have been the first of its kind from any comparable trade or organization. Thanks in no small measure to the support of the British Gas Federation the application was successful, and in the event some two-thirds of the Society's members were so scheduled, and the way was open for virtually all of them to be admitted to the Register of Protected Establishments with the advantages which it carried. Subsequently when the Government's proposals for the mobilization of man-power on a selective basis were announced, arrangements were made, as the result of the Society's representations, for machinery to be put into operation that resulted in the Government Department responsible for the affairs of the Society's members being consulted before they were deprived of the services of any individual employee engaged on Gas Industry business. During the relatively early days of the war, the Society presented to all three Service Departments a schedule, which was accepted in each case with gratitude, showing the potential capacity for war work of all those members who wished to avail themselves of the Society's offer to do this.

Broadly, therefore, during the period in which the Emergency Committee has been responsible to the Council for the conduct of the Society's affairs, every effort has been made to render that service to the members which the members would look to the Society in their interests to provide. During this period the Society has kept its finances sound, despite a notable increase in its work and activities, and the assumption of the added responsibility of staffing the Gas and Coke Oven Industries Export Group. The membership has also

been satisfactorily maintained, and indeed there is no firm of outstanding importance which, being eligible, is now not a member of the Society. The Society's relationships with its kindred organizations in the Gas Industry have become, if anything, even closer during the war period, and to this position has now to be added the fact, so far as it can be fairly assessed from our side, that the Society is fully recognized and its services are acknowledged appreciatively by the Government Departments with which, as the representative of its members, it is in contact. The war, nevertheless, has yet to be won, and the sacrifices which industry will be called upon to make may have yet to reach their zenith. Now, however, that at worst the end of the beginning is believed to have been reached, and the Society proposes to approach by the step at least of holding Council elections towards more normal working, it seems appropriate to review one or two of the more important developments which are pointing the way to the future.

Post-War Planning

In 1941 there was set up a Post-War Planning Committee of the British Gas Federation, to which the Council gratefully accepted an invitation to nominate three representatives. Four Sub-Committees were set up covering respectively Manufacture and Distribution, Utilization, Methods of Charge and Statistics, and Co-ordination of Gas Undertakings. The Society has been represented on the first two of these Sub-Committees. The main Committee has also accepted responsibility for providing information on behalf of the Gas Industry in regard to the post-war planning proposals of the Government, and in this way a very necessary measure of co-ordination within the Industry has been achieved. In the course of their investigations, the Committee have had under review the respective powers and duties of the existing national bodies, and their relationships one with the other and with the British Gas Federation. To meet the changed conditions of a post-war world, it has been decided that there should be a greater measure of central direction with the object of achieving a unified policy for the Industry as a whole, and while this report is not the place to elaborate a subject which is primarily the concern of the gas undertakings themselves and of their national organizations, it can be said that there has been the closest consultation with the Society in relation to the proposed reorganization, and that full account has been taken of the Society's constitutional position. In whatever form the objective is achieved, there is every expectation that it will set the seal on a position which has evolved over the past few years through the Society's membership of the British Gas Federation.

Various technical problems which merit close attention in readiness for the return of peace are being considered by The Institution of Gas Engineers, and either officially or unofficially, as may be appropriate, the Society is rendering every possible assistance in their consideration.

The Society is also studying closely the general trend of developments in regard to the future industrial organization of the country, as evidenced by reports issued by the Federation of British Industries, the London Chamber of Commerce, and leading industrialists, both individually and collectively.

Gas Research Board

Six representatives of the Society, nominated by the Council, are serving on the Council of the Gas Research Board, of which some seventy members of the Society are members. The problems which will have to be faced on the cessation of hostilities will require nothing less on the research side than the full weight and resources of the Industry as a whole for their solution. It is therefore gratifying to report the progress that is being made by the Gas Research Board. Notably, as from Jan. 1, 1943, contributions to the Board, subject to annual review and to the necessary funds being provided by Parliament, will earn a Government Grant on terms and conditions of which the Board have been officially advised. With regard to the form of grant, the award of a fixed block grant may be regarded, in part, as a reflection of the view of the Committee of the Privy Council that in planning their work, the Council of the Board should keep prominently in mind the importance of conducting an adequate volume of long-range research which is at once so essential to secure and retain the initiative in new development, and so eminently a function of a co-operative research organization. Now that the Gas Industry is on the same footing with its own autonomous research association as the other great fuel industries of the country, a Joint Standing Conference is being set up by the Department of Scientific and Industrial Research, comprising representatives from each of the Research Associations interested in fuel, namely, the Fuel Research Board, Gas Research Board, British Electrical and Allied Industries Research Association, British Refractories Research Association, Iron and Steel Industrial Research Council, and British Coal Utilization Research Association. The object of the Joint Standing Conference will be to review the ground to be covered by each Association and their respective programmes of work, so as to assist collaboration and avoid undesirable overlapping. It is the intention of the Gas Research Board at an early date to set up its own information Bureau.

The ground seems, therefore, to have been well prepared for Dr. J. G. King, Director of Research, to assume the responsibilities of his office. The underlying significance of these developments is not the commencement of research work by the Gas Industry, for that has been going on over very many years, but the linking up of this research work within the Industry and through the Gas Research Board with the work of other branches of industry, with the Government's own research organizations, and with the Universities. Nor do these developments mean in any way that the Gas Industry has been dissatisfied with the notable results achieved by the system of individual effort, still less that there is any desire to limit or reduce that effort. Increased co-ordination of work, the more rapid exchange of new discoveries and ideas, and an organization capable of undertaking costly research on a substantial scale, are among the benefits which it is hoped to add to those already earned. The Board as such cannot and will not be directly responsible for the practical application of knowledge derived from research, though it will seek to stimulate its practical application. The Society's Council, in reporting on the position in regard to the Gas Research Board, recalls with satisfaction that it was a Joint Committee of The Institution of Gas Engineers and the Society which in 1939, at the request of the British Gas Federation, first examined the whole question of setting up a Research Body for the Industry. This Committee, having made its report, was then authorized to proceed with the formation of the Gas Research Board as it to-day exists.

General

In 1941 Dr. E. W. Smith, at that time a serving member of the Society's Council, was appointed Director-General of Gas Supply with the general approbation of the Industry. As a result largely of his efforts the Industry has gained confidence in itself, and while for reasons which Dr. Smith has made known he has recently resigned his position, his work has not only produced immediate results which are there for all to see, but on the long view the ground has been prepared for developments to which, beyond question, the future will testify. During the year there has been created a Ministry of Fuel and Power, in which great significance attaches to the fact that the gas and electrical industries have been segregated in one Division. The formation of this new Ministry is of outstanding importance to our Industry, and to the interests which the Society represents, and while the immediate problems with which the Ministry has had to deal, such as the position of coal and, in relation to it, fuel economy, and the general questions which must arise in the organization of a new Department of State, have been perhaps the main preoccupation of the Ministry during latter months, it is presumably only a matter of time before the full implications of this development are revealed. The Society has the closest contacts with the officials of the Gas and Electricity Division, and in the view of the Council, therefore, the foundations are securely laid for such part as the Society and its members may be called upon to play in the future. This much appears at least at this stage to be evident, namely, that for the Society to attempt itself to "plan" in any detail would be premature, until at least a clearer picture is available of the circumstances of which on the Supply Side of the Industry our efforts must form a counterpart.

The Emergency Committee has watched developments with care and close interest, and the same attention will be paid to them in the future with the wider representation of the sum total of our interests which regular meetings of the full Council will provide. The time has not yet arrived, however, when the position can be regarded as having in any way crystallized, and for this reason it is not proposed to call an early general meeting of members, but when the formal business of the annual meeting has been transacted, the meeting will stand adjourned, so that at any time during the coming year, should the necessity arise, members may be called together and be empowered to take such action as under the Rules can be taken only in general meeting. The view of the Council is that developments of major importance to the interests of its members are inevitable, and that they may be expected to arise from two quarters either separately or jointly, namely, from the Ministry of Fuel and Power, and from our customers, the gas undertakings themselves. In fulfilment of their declared intention, Government Departments are regarding and using the trade organizations of the country both as their channel of contact with Industry, and as the medium through which organized Industry can make its views known to them. As was stated in the last annual report, the Gas Industry now clearly has at hand the opportunity it has sought so long, and while the framework is being provided, the sort of Industry which is to occupy it in the years to come rests first of all with the Industry itself, at whose disposal it is placed. While the Society is represented on the Post-War Planning Committee of the Industry, our part must of necessity be, while seeking to set our own house in order, to follow such leads as may come either from the gas undertakings, or from the Ministry of Fuel and Power, or both. It is the confident belief of the Council that the possibilities which were before the Society and its members in the immediate pre-war years will return, even if the shape of them is still undecided, and the Council looks to the members for their continued and loyal support, since the Society's efficient working is essential to meet the problems of to-day, and it must be kept ready, intact, and animated, to resume in due time its more normal activities and to meet the problems of to-morrow.

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STATISTICS IN THE FUEL AND POWER INDUSTRIES*

By O. W. ROSKILL

IN this Paper I am attempting to deal with generalities concerning the collection and use of statistics and to illustrate them with reference to the foundations of National Fuel Policy, a matter which has become somewhat more topical since I presented a Paper to this Institute on the subject early in 1936. My principal thesis is that national fuel policy must be approached from two angles—first, from the point of view of consumption, of securing the use of the fuel best suited from every standpoint to the purpose in view; and, secondly, from the point of view of national resources, of which we should aim at securing the optimum use. While there is a fair amount of statistical information on various aspects concerning the production of fuel and power, information on consumption is conspicuously lacking and what there is is rather inaccurate.

However, the information about the fuel and power industries now available inside the Ministry of Fuel is probably more complete than has ever been the case before, and it is to be hoped much of it will, after the war, see the light of day. It is important that Government Departments remember that they are not the only agencies who have to make decisions affecting an industry, and that if they wish individual companies in the industries to make decisions which run broadly parallel with Government policy they must make available the facts on which that policy has been based.

The coal industry is well served with statistics on the production side.

Consumption of coal (or of all fuel, expressed in therms) per ton of product is a most valuable figure. This enables each works to make a comparison of its own with average practice in the industry, and, as is well known, large scale economies come as much from raising the standard of the worst to that of the best as from radically new departures in technique. The following table summarizes almost all that is publicly known about the division of consumption of coal in Great Britain—and even this has had to be pieced together and is probably rather inaccurate. The fact that the Ministry of Fuel and Power is believed recently to have collected much more accurate and detailed figures does not alter the facts that (*a*) if the figures had been available before they would have enabled attention to be focused on fuel economy much more quickly and accurately; (*b*) they are still not available as a series over a period showing the trends—*e.g.*, which industries are improving their fuel economy practice, and which are not; (*c*) they are not available to the industries concerned. Under war conditions this is inevitable, as the figures would certainly be of use to the enemy, but they should be published as soon as possible. They are likely to be much more use in the hands of industry than in the hands of Government.

DIVISION OF CONSUMPTION OF COAL IN GREAT BRITAIN (MILLION TONS).

	1930.	1935.
Industries covered by the Census of Production:		
Coke ovens and manufactured fuel works ...	18.36	18.61
Gas-works	17.85	17.56
Coal mines	14.21	11.57
Electricity undertakings	9.37	11.93
Iron and steel	9.06	9.03
Bricks, cement, pottery, glass, and building mats	7.08	8.60
Textiles	7.13	7.58
Chemical industries	3.82	4.52
Food, drink and tobacco industries	3.44	3.43
Printing paper and stationery	2.68	2.95
Engineering, shipbuilding and vehicles	1.75	1.71
Other industries, public utilities and Government departments†	4.67	4.57
	99.42	102.06
Railway Companies (for loco. use)	12.87	12.29
Vessels engaged on the coastwise trade (bunkers)	1.28	1.25
	113.57	115.60
Consumption by firms employing less than 10 persons (not covered by Census), by domestic users, by commercial firms and institutions and by distributive and catering trades (by difference)	53.01	48.87
Total consumption	**166.58**	**164.47**

† Chiefly (in order of importance) non-ferrous metals, non-metallic and metallic mines and quarries, water undertakings, railways (for manufacturing purposes), War Office (including Ordnance factories), &c.

The production side of gas is fairly well covered, so far as basic statistics are concerned, by what were formerly the annual Board of Trade "Returns relating to all authorized Gas Undertakings in Great Britain." Part I of these returns gives quantity of coal carbonized, coke used for water gas and producer gas, and oil used for carburetting. Also the quantity of coal gas and water gas made; the sales of gas to local authorities for public lighting, to prepayment consumers and to other consumers; the quantities of residuals made (coke and breeze, tar and sulphate of ammonia); the number of prepayment and ordinary consumers and the length of mains. These figures are available both in total for the whole country and in detail for every undertaking. Separate tables show the quantities of "other gas" made (*e.g.* Mond gas, Tully gas, producer gas, &c.); gas sold separately for industrial purposes through a separate main; gas bought by and sold to authorized undertakings; gas bought from coke ovens by authorized undertakings, &c. Part II of the Board of Trade returns contains very complete financial statistics.

But beyond global figures and figures for public lighting, which account for under 5% of total sales, little or no statistical material on consumption is available. Indeed, though a few undertakings such as Sheffield have published estimates for the division of their consumption between industrial and domestic, the majority have little idea of what this division is—let alone any subdivision of industrial consumption by industry or purpose or the important division between domestic consumption proper and commercial consumption in shops, offices, hotels, institutions, and the like. The difficulties are admitted. It is not always possible to meter supplies separately (particularly if the consumer pays for the meter), and a single company may use gas for heating platens of plastic moulding presses, for heating a conveyor enamelling oven, for space heating in offices, and for cooking in the canteen. But at present little or no collective effort is made to overcome these difficulties, probably because, although most sales managers worth their title nowadays know that sales effort cannot be planned without market survey, they cannot get their views translated into action owing to the very widespread feeling that the collection of a lot of figures is just a waste of time.

I am touching here on an important point of principle. I am opposed to compulsion as much as most people in this country, but I do suggest that we must more frequently use the test, "Does the gain to the community and through the community to the individual outweigh the trouble or disadvantage to the individual of any contemplated compulsion?" The pooling of useful figures compulsorily obtained—where they cannot reasonably be obtained by individual initiative—seems to me to fall clearly within the bounds of justifiable compulsion. I would, however, like to see a tribunal to which all contemplated demands for statistics must be submitted with a case setting out the purpose for which they are required before any individual or company can be forced to fill in yet another form. The form should contain, on the back, a summary of the purpose underlying the questions (somewhat as a demand for rates embodies a summary of the destination of your money), and the tribunal should pay far more attention than is now common to the use of ingenuity in presentation of the questions and pertinency of the form as a whole.

The electricity supply industry is well served with statistics on the generation and bulk transmission side for which it has principally the Electricity Commissioners to thank—another example (like the coal industry) where public control has brought with it the benefits of improved statistical knowledge of the industry. This may provide some compensation to those who think that Government interference has already gone too far. On the other hand, figures dealing with consumption are sadly lacking.

The following is an attempt to make some subdivision of the consumption of electricity:

DIVISION OF CONSUMPTION OF ELECTRICITY IN GREAT BRITAIN (MILLION KW.H.).

	1930.	1935.
(1) Electricity supplied for lighting (separately metered)	—	1,416
(2) Electricity supplied for heating and cooking (separately metered)	—	689
(3) Electricity supplied for combined lighting, heating and cooking (not separately metered)	—	2,343
(4) Electricity supplied for heating, lighting and cooking, unclassified	—	916
(5) Total for lighting, heating and cooking ...	2,720	5,364
(6) Public lighting	168	252
(7) Traction	1,805	2,002
(8) Power	5,339	8,175
(9) Total items 1 to 8*	10,032	15,793
(10) Total units sold by authorized undertakers (Electricity Commission figures)	9,030	14,550
(11) Apparent sales by non-statutory undertakers (item 9 less item 10)†	1,002	1,243
Per cent. item 11 of item 9	10%	8%

* Items 1 to 9 are Census of Production figures.

† This figure is almost certainly too high, probably because of some duplication in items 1 to 9, and partly owing to differences in statistical methods between the Census and the Commissioners.

I have said nothing about the type of organization which should be envisaged for the collection and collation of statistical material on the fuel and power industries. To a great extent this is bound up with the structure of these industries which we shall see in the future. I have, for instance, little doubt that closer relationship between all three, particularly on the sales side, is likely to be established. While there should be a continuation of the collection of statistics by Government, an extension of the field covered and better arrangements for making Government figures quickly available to the industry in a suitable form, I am convinced that there should be an organization independent both of Government and of the industries concerned, but serving the joint interests of the industries. Such an organization must have a standard of professional responsibility no less exacting than that of, say, accountants, since there will be a lot of figures which it will need from individual companies and undertakings which they would probably be unwilling to supply were they to suspect that they might fall into the hands of their competitors. The staff involved must, moreover, have wide technical and economic knowledge of all the industries concerned and make arrangements to keep in touch not only with their day-to-day problems on which statistical material may be required, but also on the trend of developments in policy so that figures may always be collected ahead of immediate requirements in order to be available when wanted.

(A report of the discussion will be published next week)

* From a Paper to the Institute of Fuel, May 20.

Gas Products Prices

The London Market May 24.

All Coal Tar Products are in good demand, and Pitch in the London area remains about 45s.

The Provinces May 24.

The average prices of gas-works products during the week were: Pitch and Crude Tar,* Toluole, naked, North, 90's, 1s. 10d., pure, 2s. 5d. (controlled by the Control of Toluene No. 2 Order, July 3, 1941, which fixes the maximum price at which this material may be sold). Naphtha and Xylol controlled by the Coal Tar, Naphtha, and Xylol Order, 1942, dated Dec. 7, 1942, and operative from Dec. 21. Carbolic acid, 60's, naphthalene, and anthracene controlled by the Coal Tar Products Prices Order S. R. & O. 2509, dated Dec. 7, 1942, and operative from Jan. 1, 1943. Filtered heavy oil (min. gr. 1,080), 7½d. to 8d. Creosote oil has been generally controlled as to direction and price for some time past. Current value—fuel grades 5d. to 5¼d.; timber preservation and other purposes 4¾d. to 6d.

* In regard to pitch and crude tar prices we would ask readers to refer to the editorial note on p. 396 of the "JOURNAL" for Sept. 10, 1941.

Tar Products in Scotland May 22.

Market conditions are unchanged. Deliveries continue on a large scale. Refined tar controlled. Value is 4½d. per gallon *ex* Works, naked. Creosote oil: Specification oil, 6¼d. to 7d.; low gravity, 7¼d. to 7½d.; neutral oil, 6d. to 6½d.; hydrogenation oil, 5⅞d. per gallon; all *ex* Works in bulk. Refined cresylic acid is in good call at 3s. 6d. to 4s. 6d. per gallon *ex* Works, naked, according to quality. Crude naphtha, 6½d. to 7d. per gallon. Solvent naphtha: Basic prices delivered in bulk, 90/160 grade 2s. 8d., and 90/190 Heavy naphtha, Unrectified, 1s. 10½d.; Rectified, 2s. 3d. per gallon. Pyridine, 90/160 grade, 13s., and 90/140 grade, 15s. per gallon.

Gas Stocks and Shares

Business on the Stock Exchange last week was quiet and dull. Although Mr. Churchill's speech improved the tone at the opening on Thursday and prices began to move up, the movement did not go far, but the week closed with the tone generally firm.

The volume of business in gas stocks and shares also eased up, but this did not prevent a number of stocks improving in value; the upward movement was most marked among "ordinaries." Gas Light and Newcastle units both made further small advances, while Southampton closed 5 points higher. A feature in the Supplementary List was the sharp rise of 10 points in Mid-Southern Utility "A" to 92½; the last transaction in this stock was in March, 1942, at 66½.

The following price changes were recorded during the week:

SUPPLEMENTARY LIST

Croydon 4 p.c. Deb.	102—107	+2
Mid-Southern Utility "A"	90—95	+10
North Middlesex 5 p.c. Pref. (*x.d.*)	103—108	May 17
Plymouth 5 p.c. Deb.	112—117	+2
Reading 4 p.c. Deb.	97—102	+2

OFFICIAL LIST

Commercial Ord.	63—68	+3
Gas Light Units	17/6—18/6	+-/3d.
Ditto 3½ p.c. max.	70—75	+2
Imperial Continental Ord.	81—85	−½
Mid-Southern Utility "C"	92—97	+2
Plymouth Ord.	80—85	+3
Primitiva Holdings Ord. (*x.d.*)	13/—15/-	May 17
South-Eastern Gas Corporation Ord.	18/9—19/9	+-/6d.
Ditto Red. 4½ p.c. Pref.	18/6—20/6	+-/6d.
South Metropolitan Ord.	77—82	+1
Southampton Ord.	83—88	+5
Tottenham 4 p.c. Deb.	102—107	+2
Uxbridge Ord. (*x.d.*)	118—123	May 17
Wandsworth 4 p.c. Pref.	91—96	+1
Ditto 4 p.c. Deb.	102—107	+4

PROVINCIAL EXCHANGES

Newcastle Units	23/3—23/9	+-/3d.
Ditto 3½ p.c. Red. Deb.	98—100	+6½

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